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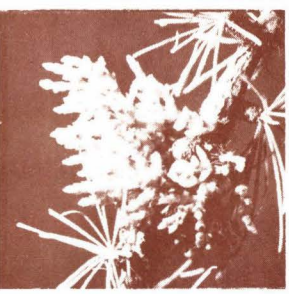

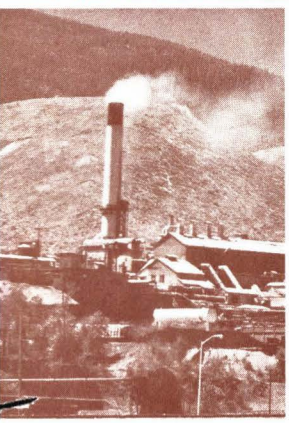

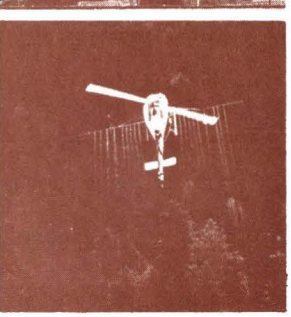

FOREST ENVIRONMENTAL PROTECTION

USDA · FOREST SERVICE · NORTHERN REGION

State & Private Forestry · Missoula, MT 59801

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SURVEY AND EVALUATION OF PARK, CEMETERY, AND STREET TREES, BOZEMAN, MONTANA

by

Oscar Dooling 1/ and Steve Kohler 2/

SUMMARY

Shade tree insect and disease activity within the city limits of Bozeman, Montana, were evaluated. Other than a few minor insects, the park, cemetery, and street trees are in remarkably good condition. Both the Park Department and private homeowners appreciate the value of trees in the urban environment. Recommendations on tree maintenance, removal, and replacement are provided.

INTRODUCTION

On July 8, we evaluated park, cemetery, and street trees in Bozeman, Montana. This evaluation was requested by Dwain Wortman, Superintendent of Parks. We were assisted by Robert Zielinske, Bozeman office of the Division of Forestry; and Wortman.

1/ Plant Pathologist, Forest Environmental Protection.
2/ Entomologist, Montana Department of Natural Resources and Conservation, Division of Forestry, Missoula, Montana.

METHODS

Parks and Cemetery.--We walked through the two major parks and the cemetery, with Wortman pointing out disorders that were of concern to him.

Streets.--We drove all the streets north of Main in a north-south direction, and all the streets south of Main in both north-south and east-west directions. Anytime we observed an abnormally appearing tree, it was examined.

RESULTS

Lindley Park.--We found the following:

Western spruce budworm [3/] on spruce and Douglas-fir.
A gall mite on mountain ash.
Spider mite on spruce.
Frost cracks on green ash, well healed.

Cooper Park.--We found the following:

Aphids on American elm.
Wetwood on American elm.
Water sprouts common on main stem of American elm.
Frost cracks on green ash, well healed.

Sunset Hills Cemetery.--We found the following:

Western spruce budworm on spruce and Douglas-fir.
A gall mite on mountain ash.
Fir broom rust on subalpine fir.
Top die-back on weeping birch caused by moisture deficiency.
Basal injury on mountain ash caused by mower operators.
Top die-back on mountain ash probably associated with basal injury.

Streets.--We found very little insect, disease, or mechanical damage to the street trees.

DISCUSSION

What we did not find in Bozeman is worth mentioning. In many areas, green ash has more problems than any other species. Conspicuous by their absence were carpenter worm, ash borer, oyster shell scale, and verticillium wilt.

3/ Scientific names of pests and host trees are in the Appendix.

Dutch elm disease of American elm is not yet present in Bozeman, but we expect it to be only a matter of time before it will be. We have two confirmed occurrences in Missoula, and a few suspected cases in Billings. With the relatively small population of American elm, the disease will not be as serious in Bozeman as it has been in cities in the East and Midwest.

We saw several weeping birch on private property that showed varying degrees of top die-back. This species appears to do quite well when young, but as the trees approach maturity they start to decline in vigor and exhibit top die-back. The best theory we have as to the cause is a lack of moisture. The trees apparently require much more moisture than they get from either rainfall or irrigation.

As a general statement, the trees in Bozeman are in remarkably good shape. Homeowners appear to have a high regard for their trees and take care of them.

RECOMMENDATIONS

Tree Maintenance

1. Remove all dead branches and tops larger than 2 inches in diameter at least once each year.

2. Remove broken branches and tops caused by storm damage or heavy snows as they occur.

3. Meet with officials from Montana Power Company and discuss unfavorable effects of "hat-racking" or severely topping street trees. Discuss alternatives to this practice.

4. Prevent basal wounds caused by mower operators in parks and cemetery.

5. Use wound dressing on all pruning scars and basal wounds larger than 2 inches.

Tree Removal

1. Gradually remove all inferior species of trees such as white poplar, cottonwood, and boxelder.

2. Remove all trees with obvious heart rot or weakened main stems.

3. Remove all dead trees promptly.

Tree Replacement

1. Trees to use:

Norway maple	Spruce
Sugar maple	Subalpine fir
Basswood	Ponderosa pine
Green ash	Lodgepole pine
Bur oak	Silver maple
Mountain ash	Aspen
Douglas-fir	

2. Trees to avoid:

Cottonwood
White poplar
Boxelder
American elm
Siberian elm
Russian olive
Weeping birch

Insect Control by Chemicals

Chemical control recommendations are not included in this report. They are subject to change based on registration review by both the State of Montana and the Federal Environmental Protection Agency. Consult with the Montana Division of Forestry for current control recommendations.

APPENDIX

Scientific Names of Pests and Host Trees Mentioned in This Report

Pests

Western spruce budworm	*Choristoneura occidentalis*
A gall mite	*Eriophyes sp.*
Spruce spider mite	*Oligonychus ununguis*
Elm aphids	*Eriosoma americanum*
Wetwood of elm	*Erwinia nimipressuralis*
Fir broom rust	*Melampsorella caryophyllacearum*
Carpenter worm	*Prionoxystus robiniae*
Ashborer	*Podosesia syringae fraxini*
Oyster shell scale	*Lepidosaphes ulmi*
Verticillium wilt	*Verticillium albo-atrum*
Dutch elm disease	*Ceratocystis ulmi*

Trees

Spruce, Engelmann	*Picea engelmannii*
Spruce, blue	*Picea pungens*
Douglas-fir	*Pseudotsuga menziesii*
Mountain ash	*Sorbus sitchensis*
Green ash	*Fraxinus pennsylvanica*
American elm	*Ulmus americanum*
Subalpine fir	*Abies lasiocarpa*
Weeping birch	*Betula pendula*
White poplar	*Populus alba*
Cottonwood	*Populus trichocarpa*
Boxelder	*Acer negundo*
Norway maple	*Acer platanoides*
Sugar maple	*Acer saccharum*
Silver maple	*Acer saccharinum*
Aspen	*Populus tremuloides*
Basswood	*Tilia americana*
Siberian elm	*Ulmus pumila*
Bur oak	*Quercus macrocarpa*
Russian olive	*Elaeagnus angustifolia*
Ponderosa pine	*Pinus ponderosa*
Lodgepole pine	*Pinus contorta*